

## MAXAIR Systems Information Relative to Current Virus Considerations

The following is provided for information only. Per FDA labeling requirements we make no claims of testing or protections against a specific biological agent.

Do to the immediacy of the need, not all the procedures here described have been fully evaluated. Appropriate caution should be followed. The user assumes all responsibility for deviations from the approved user instructions provided with the products.

Order numbers (O.N.), for ordering product, are given along with the part numbers, 8-digit NIOSH/ manufacturing numbers. The part numbers are in parenthesis.

### 1. Terminology:

- a) A MAXAIR Hood contains a lens, a filter (white area at top above the top peripheral seam) and shroud (material below the filter seam).
- b) A MAXAIR Shroud contains a lens and a shroud, the filter is the filter cartridge under the hard surface filter cover (700 Systems) or filter cover cap (CAPR Systems).
- c) MAXAIR DLC products contain an additional interior facial seal cuff.
- d) Shroud products are used with a filter cover/filter cover cap and re-usable enclosed filter/filter cartridge.

### Basics of Cuff, Shroud, Hood Configurations



#### Cuff configuration:

Filter Cover Cap (CAPR Systems)/Filter Cover (700 Systems) - "Bump Cap" like hard cover protecting the filter underneath (blue).

Lens - Either combined with a cuff and attaches to the front and sides of the bottom of the Cover (CAPR Systems), or part of the cover (700 Systems).

Cuff- Either the back part of the Lens (CAPR Systems) , or attaches to the bottom of the Lens (700 Systems)



#### Shroud configuration:

Filter Cover/Filter Cover Cap - "Bump Cap" like hard cover protecting the filter underneath (blue) - same as for a cuff configuration.

Shroud - One piece that attaches below the top cover,

- A) Lens
- B) Cuff (from lens to face)
- C) Shroud (Skirt) the goes all around the head and down over the shoulders.



#### Hood configuration:

(NOTE: A Filter Cover/Filter Cover Cap is not used in this configuration.)

The Hood consists of three components in one integrated piece,  
A) The top piece is the filter (some hoods are used with a post filter cartridge attached to the helmet prior to assembling the hood over the helmet

- B) The front piece is the lens
- C) The sides, back, and bottom piece is the shroud (skirt).

## 2. Considerations:

- a) All MAXAIR products are rated NIOSH HE.
- b) Not all MAXAIR products are appropriate for use with Ebola. Instructions for all are given below regardless of our recommendations for use.
- c) 2360-01 (01031151) & 2360-02 (01031220) Cuffs (700 Systems) and 2365-02 (ML and SM, (01031291 & 01031316)) DLC lens/cuffs (CAPR Systems) do not have full head coverage and should not be used for Ebola.
- d) The 2260-01 (01031186) & 2260-02 (01031217) Shrouds (700 Systems) are semi reusable products and the cleaning and doffing procedures make it a poor choice for Ebola.
- e) Use of an isolation gown with appropriate leg coverings instead of a coverall may allow better doffing.
- f) Although still under evaluation, the following suggestions are provided for appropriate products.

## 3. System suggestions for current MAXAIR products for contact transmissible pathogens:

### a) 2000-300 (“300”) Double Shroud Hood System

- i) The 2120-10 Double Shroud Hood (01031027) used with the 2025-03 Helmet (02531222).
- ii) The double shroud offers more protection, the hood reduces system decontamination issues, but is more difficult to doff than the 2260-05 DLC shroud.

### b) CAPR DLC Double Shroud System

- i) The 2261-01 DLC Double Shroud (01031394 & 01031396) used with the 2070-03 Helmet (03531001), 2061-03 Filter Cover Cap (01031284) & 2164-10 HE Filter Cartridge (01031327).
- ii) The double shroud offers more protection but is more difficult to doff than the 2260-05 DLC shroud; the Filter Cover Cap does need de-conning after use.

### c) CAPR DLC HE Hood System

- i) The 2270-01 DLC Hood (01031417 & 01031425) used with the 2070-03 Helmet (03531001) & 2165-10 HE Filter Cartridge (01031254).
- ii) Hoods are one piece (filter, lens, cuff, shroud) that cover the entire helmet to minimize de-con after use; does use a post filter cartridge assembled to the helmet prior to assembling the Hood.

### d) 2000-800 (“800”) System

- i) The 2000-25DMA (01031301) used with the 2065-03 Helmet (02531219).
- ii) The simplest system for assembly, donning/doffing; one piece (filter, lens, shroud).

### e) CAPR DLC Shroud System

- i) 2260-05 DLC Shroud (01031434 & 01031435) used with the 2070-03 Helmet (03531001), 2061-03 Filter Cover Cap (01031284) & 2164-10 HE Filter Cartridge (01031327).

## 4. Fluid resistance:

- a) AAMI/ANSI Fluid barrier levels (PB70) are specified from the neck down (gown portion only). **We reference them only because they are familiar to many healthcare workers.**
  - i) AAMI Level 1: Less than 4.5 grams (spray) penetration for AATCC TM42.
  - ii) AAMI Level 2: Less than 1.0 g penetration by AATCC TM42 and greater than 25 cm hydrostatic head by AATCC TM127.
  - iii) AAMI Level 3: Less than 1.0 g penetration by AATCC TM42 and greater than 50 cm hydrostatic head
  - iv) AAMI Level 4: no penetration for ASTM F1670 & ASTM F1671 (Synthetic Blood & Viral Penetration).
  - v) The requirements for Surgical Gowns are different than the requirements for Isolation Gowns

- b)** Current MAXAIR products are not rated for fluid resistance.
- c)** Effective 11/1 all products will be tested, but not labeled ... the labeling change would typically require NIOSH approval for the added specification. Labeling will be updated as soon as possible.
- d)** The 2000-25DMA hood (01031301) –
  - i) The shroud portion is resistant to light splash (testing criteria for AAMI level 1).
  - ii) This product is a high comfort product designed primarily for respiratory protection.
- e)** The shroud portion of all other products is resistant to fluid penetration.
  - i) Testing criteria for AAMI level 3.
  - ii) The material strongly resists Synthetic Blood penetration but does not pass ASTM F1670.
- f)** The filter portion of all stand-alone hoods (not used with an additional post filter/filter cartridge) are resistant to fluid penetration (testing criteria for AAMI level 3).
- g)** The filter portion of the 2270-01 DLC hoods (01031417 & 01031425) is resistant to light splash (testing criteria for AAMI level 1).
  - i) The post filter cartridge (2165-10) adds additional fluid protection.
- h)** Products meeting AAMI/ANSI Level 4 testing criteria as well as a one piece isolation toga will be available as soon as possible, they will be so labeled.
  - i) The level 4 material is more expensive than the current level 3 material.

## **5. Donning, ALL Systems**

- a)** Set the airflow switch to High (not required but assumed preferred setting when wearing full body PPE).
- b)** Cover the switch with a piece of elastic or duct tape (this is the only area not able to be sprayed down).
- c)** For the 2070-03 (03531001) helmet the tape should be under the liner.
  - i)** Unsnap and Lift the back of the liner slightly, place tape, then re-snap.
- d)** Don the helmet and adjust per UIM (User's Instructions manual that ships with each helmet).
- e)** Connect the battery to the helmet (ensure the helmet is functioning properly; check LEDs for full battery charge – 3 green LEDs lit).
- f)** The battery should be worn inside the coverall or isolation gown to eliminate contamination.
- g)** Use of an isolation gown with appropriate leg coverings may allow fully contained doffing of the upper body PPE and hoods.

## **6. Doffing, ALL Systems**

- a)** Leave the helmet on the head until the coverall or isolation gown has been removed.
- b)** Put on clean gloves.
- c)** Unplug the cord from the battery.
- d)** Rotate the front of the helmet up and remove the helmet up and back.
- e)** Wait until after the helmet is removed and then loosen the headband – this is to minimize the chance of cross contamination.
- f)** By appropriate neck closure of an isolation gown and taping of the hood to the gown, it may be possible to roll the gown inside out over the hood and helmet and remove the entire upper body covering as a contained unit. The internal ties on the gown must be closed loose enough to allow it to be rolled off the body. (We feel this will be the preferred method for all our products. Although it is still being evaluated instructions are included.)

**7. 300 System - 2025-03 helmet (02531222)with 2120-10 Double Shroud Hood (01031027)**

**a) Donning**

- i) Don the hood according to UIM.
- ii) Tuck the inner shroud into the coverall or isolation gown.
- iii) Close the coverall or isolation gown.
- iv) Cut off the neck closure ties on the inner shroud (if installed). The ties can help control the material while closing the neck of the gown or coverall, but are not necessary when the inner shroud is tucked in and will be problematic for doffing.
- v) Tape the shroud to the coverall or gown to prevent "riding up" (suggested but not required).
- vi) The body ties are provided to control suit inflation with impermeable and semi-impermeable coveralls.
- vii) Rotate the head from side to side to assure ample movement.
- viii) If the hood has sewn seams (pre Dec. 2014), tape the neck and chin seam with elastic or duct tape.
- ix) To allow fully contained doffing use an isolation gown.
  - (1) Use of the outer neck tie will help maintain head mobility.
  - (2) Once fully donned (including gown), tape the lower front edge of the outer shroud to the gown.
  - (3) Tape the outer edge of the shoulders to the shoulders of the gown.
  - (4) Tape hood-to-gown in at least one place between the shoulder and the front on each side.
  - (5) Lift the back of the outer shroud to expose the back closure of the gown.
  - (6) Tape across the gown closure 8-12 inches below the neck but above the bottom edge of the inner shroud.
  - (7) Open the gown neck closure and fold over at the tape.
  - (8) Tape the inside layer of the gown to the inner hood shroud.
  - (9) Tape the outer layer of the gown to the inner hood shroud.
  - (10) Cover neck closure and taped areas with the outer hood shroud.
  - (11) Tape the back of the hood outer shroud to the gown in at least 3 places.

**b) Doffing - NOTE: If the fully contained taping instructions in a) Donning have been performed, ignore steps iv) and v) below.**

- i) Rinse gloved hands in disinfectant solution and follow all other CDC recommended glove protocols.
- ii) Untie neck tie; cut off all ties.
- iii) Release lens snaps by pulling black pull tabs.
- iv) Fold outer shroud up over the top of helmet.
- v) Hold only the folded outer shroud, pull hood backwards and off the helmet allowing the inner shroud to pull out of the coverall or isolation gown.
- vi) If the above fully contained taping instructions have been performed,
  - (1) Grasp the lower edge of the gown and roll it inside out. (like forming a cuff on a pair of pants)
  - (2) Continue pulling the "cuff" edge to roll the gown inside out, up and off the body and over the helmet.
  - (3) When the gown clears the shoulders, pull the arms out of the sleeves turning them inside out.
    - (a) DO NOT REMOVE HANDS FROM THE SLEEVES.
    - (b) The sleeve may be used as a pair of clean mittens to help finish doffing.
  - (4) As the hood is coming off the helmet it will be necessary to rotate it back slightly to release the filter pocket from the back of the helmet.
  - (5) Continue rolling the gown and hood off the helmet and move it forward and away from the body.
  - (6) Remove hands from sleeves.

**8. CAPR DLC Double Shroud System with 2261-01 DLC Double Shroud (01031394 & 01031396):**

- a) Use with the 2070-03 Helmet (03531001), 2061-03 Filter Cover Cap (01031284) & 2164-10 HE Filter Cartridge (01031327).
- b) Donning:
  - i) Don the hood or shroud according to UIM.
  - ii) Tuck the blue inner shroud into the coverall or isolation gown, the neck tie is only needed to improve head mobility.
  - iii) Cut off the inside neck ties. They are only necessary if the inner shroud is not tucked into a gown and they will be problematic for doffing.
  - iv) Tape the top of the shroud to the filter cover cap skirt to prevent possible fluid intrusion, and allow spray off de-con prior to doffing.
  - v) Tape shroud to coverall or gown to prevent "riding up" (suggested but not required)
  - vi) To allow fully contained doffing use an isolation gown.
    - (1) Once fully donned (including gown) tape the lower front edge of the shroud to the gown.
    - (2) Tape the outer edge of the shoulders to the shoulders of the gown.
    - (3) Tape in at least one place between the shoulder and the front on each side.
    - (4) Lift the back of the outer shroud to expose the back closure of the gown.
    - (5) Tape across the closure 8-12 inches below the neck but above the bottom edge of the inner shroud.
    - (6) Open the neck closure and fold over at the tape.
    - (7) Tape the inside layer of the gown to the inner shroud.
    - (8) Tape the outer layer of the gown to the inner shroud.
    - (9) Return the gown neck closure to its original position but do not fasten it.
    - (10) Cover neck closure and taped areas with the outer hood shroud.
    - (11) Tape the back of the hood shroud to the gown in at least 3 places.
- c) Doffing- Note: If the above fully contained taping instructions have been performed, Ignore steps vii) through xiv).
  - i) Rinse gloved hands in disinfectant solution and follow all other CDC recommended glove protocols.
  - ii) Spray off the filter cover and upper areas of the shroud fully wetting the filter cover and tape.
    - (1) Bleach is not recommended because the odor will cause significant discomfort
    - (2) We are evaluating Hydrogen Peroxide but have not completed that evaluation - This will be an odor only evaluation. Disinfectant properties will be based on the disinfectant product claims.
    - (3) This step may not be necessary but it lowers the chance of cross contamination.
  - iii) Wipe dry with a compatible wipe. (Don't mix bleach and ammonia.)
  - iv) Untie all ties and cut them off.
  - v) Remove tape from the top of shroud.
  - vi) Un-snap 3 snaps at back of shroud.
  - vii) Lift back elastic band of shroud onto the top cover.
  - viii) Roll the back of the shroud inside out and pull forward over the helmet.
  - ix) Allow the inner shroud to pull out of the coverall or isolation gown.
  - x) Grasp the outside of the inner shroud near the back bottom edge and pull it inside out and up to meet the outer shroud.
  - xi) Continue pulling forward and off the helmet.
  - xii) Pull the lens free of the snaps (side posts).
  - xiii) Continue pulling forward to pull the front of the inner shroud free from the coverall or isolation gown.
  - xiv) Remove the coverall or isolation gown per CDC guidelines.
  - xv) Spray de-con the helmet and filter cover per the procedure below.
  - xvi) Do not remove the filter cover unless the filter is to be replaced.
  - xvii) If the above fully contained taping instructions have been performed,
    - (1) Grasp the lower edge of the gown and roll it inside out. (like forming a cuff on a pair of pants)
    - (2) Continue pulling the "cuff" edge to roll the gown inside out and off the body and over the helmet.
    - (3) When the gown clears the shoulders, pull the arms out of the sleeves turning them inside out.
      - (a) DO NOT REMOVE HANDS FROM THE SLEEVES.
      - (b) The sleeve may be used as a pair of clean mittens to help finish doffing.
    - (4) Continue rolling the gown and shroud off the helmet and move it forward and away from the body.
    - (5) Pull the lens free from the snaps (side posts)
    - (6) Remove hands from sleeves.

**9. CAPR DLC Shroud System with 2260-05 DLC Shroud (01031435 & 01031434).**

- a) Use with the 2070-03 Helmet (03531001), 2061-03 Filter Cover Cap (01031284) & 2164-10 HE Filter Cartridge (01031327).
- b) Donning:
  - i) Don the according to UIM
  - ii) Tape the top of the shroud to the filter cover skirt to prevent possible fluid intrusion, and allow spray off de-con prior to doffing.
  - iii) Adjust the neck closure tie for improved head mobility.
  - iv) Tie the body tie to coverall or gown to prevent "riding up"
  - v) The ties will be cut off immediately prior to doffing.
  - vi) To allow fully contained doffing use an isolation gown.
    - (1) Once fully donned (including gown) tape the lower front edge of the shroud to the gown.
    - (2) Tape the outer edge of the shoulders to the shoulders of the gown.
    - (3) Tape in at least one place between the shoulder and the front on each side.
    - (4) Lift the back of the shroud to expose the back closure of the gown.
    - (5) Tape across the closure 8-12 inches below the neck but above the bottom edge of the inner shroud.
    - (6) Open the neck closure and fold over at the tape.
    - (7) Put a piece of double sided tape on the inside layer of the gown.
      - (a) A piece of duct tape may be rolled to create a piece of double sided tape.
    - (8) Put a piece of double sided tape on the folded over outer layer of the gown.
    - (9) Cover neck closure and taped areas with the outer hood shroud.
    - (10) Press the outer shroud onto the double sided tapes.
    - (11) Tape the back of the hood shroud to the gown in at least 3 places.
- c) Doffing - Note: If the above fully contained taping instructions have been performed, Ignore steps viii) through xi).
  - i) Rinse gloved hands in disinfectant solution and follow all other CDC recommended glove protocols.
  - ii) Spray off the filter cover and upper areas of the shroud fully wetting the filter cover and tape.
    - (1) Bleach is not recommended because the odor will cause significant discomfort
    - (2) We are evaluating Hydrogen Peroxide but are not done yet.
    - (3) This will be an odor only evaluation. Disinfectant properties will be based on the disinfectant product claims.
    - (4) This step may not be necessary but it lowers the chance of cross contamination.
  - iii) Wipe dry with a compatible wipe. (Don't mix bleach and ammonia.)
  - iv) Untie all ties and cut them off.
  - v) Remove tape from the top of shroud.
  - vi) Un-snap 3 snaps at back of shroud.
  - vii) Lift back elastic band of shroud onto the top cover.
  - viii) Roll the back of the shroud inside out and pull forward over the helmet.
  - ix) Continue pulling forward and off the helmet.
  - x) Pull the lens free of the snaps (side posts).
  - xi) Remove the coverall or isolation gown per CDC guidelines.
  - xii) If the above fully contained taping instructions have been performed,
    - (1) Grasp the lower edge of the gown and roll it inside out. (like forming a cuff on a pair of pants)
    - (2) Continue pulling the "cuff" edge to roll the gown inside out and off the body and over the helmet.
    - (3) When the gown clears the shoulders, pull the arms out of the sleeves turning them inside out.
      - (a) DO NOT REMOVE HANDS FROM THE SLEEVES.
      - (b) The sleeve may be used as a pair of clean mittens to help finish doffing.
    - (4) Continue rolling the gown and shroud off the helmet and move it forward and away from the body.
    - (5) Pull the lens free from the snaps (side posts)
    - (6) Remove hands from sleeves.
  - xiii) Spray de-con the helmet and filter cover per the procedure below.
  - xiv) Do not remove the filter cover unless the filter is to be replaced.

**10. CAPR DLC Hood System with 2270-01 DLC Hoods (01031417 & 01031425)**

**a)** Use with the 2070-03 helmet (03531001) and the 2165-10 Post Filter cartridge (01031254).

**b) Donning:**

- i) Don according to UIM.
- ii) The bottom of the shroud should be outside the coverall or isolation gown.
- iii) Tie all ties according to the UIM.
- iv) To allow fully contained doffing use an isolation gown.
  - (1) Only tie the neck closure tie. Cut off the body tie.
  - (2) Once fully donned (including gown) tape the lower front edge of the shroud to the gown.
  - (3) Tape the outer edge of the shoulders to the shoulders of the gown.
  - (4) Tape in at least one place between the shoulder and the front on each side.
  - (5) Lift the back of the shroud to expose the back closure of the gown.
  - (6) Tape across the closure 8-12 inches below the neck but above the bottom edge of the inner shroud.
  - (7) Open the neck closure and fold over at the tape.
  - (8) Put a piece of double sided tape on the inside layer of the gown.
    - (a) A piece of duct tape may be rolled to create a piece of double sided tape.
  - (9) Put a piece of double sided tape on the folded over outer layer of the gown.
  - (10) Cover neck closure and taped areas with the outer hood shroud.
  - (11) Press the outer shroud onto the double sided tapes.
  - (12) Tape the back of the hood shroud to the gown in at least 3 places.

**c) Doffing - Note: If the above fully contained taping instructions have been performed, ignore steps iv) & v).**

- i) Rinse gloved hands in disinfectant solution and other CDC recommended glove protocols.
- ii) Untie all ties and cut off.
- iii) Lift back of filter to release the elastic from the back of the helmet.
- iv) Roll back of hood inside out and pull forward off helmet.
- v) Pull lens free of snaps.
- vi) If the above fully contained taping instructions have been performed,
  - (1) Grasp the lower edge of the gown and roll it inside out. (like forming a cuff on a pair of pants)
  - (2) Continue pulling the “cuff” edge to roll the gown inside out and off the body and over the helmet.
  - (3) When the gown clears the shoulders, pull the arms out of the sleeves turning them inside out.
    - (a) DO NOT REMOVE HANDS FROM THE SLEEVES.
    - (b) The sleeve may be used as a pair of clean mittens to help finish doffing.
  - (4) Continue rolling the gown and hood off the helmet and move it forward and away from the body.
  - (5) Pull the lens free from the snaps.
  - (6) Remove hands from sleeves.
- vii) Spray filter cartridge and helmet with Hydrogen Peroxide disinfectant.
  - (1) We are evaluating the effects on the filter efficiency but anticipate minimal effect based on tests others have done on FFPs and the fluid resistance of the filter.
  - (2) The spray will only provide surface decontamination of the filter. Based on testing by others on FFPs, it will not fully disinfect the filter cartridge.
  - (3) This should only be required if the filter is subjected to significant splash but we are recommending it because of the amount of unknowns.



**11. 800 SYSTEM with 2000-25DMA Hood (0031301):**

**a) Use with 2065-03 Helmet (02531219).**

**b) Donning:**

- i) Because the shroud portion of the 2000-25DMA hood is only splash resistant, the use of a fluid resistant or impervious surgical or other hood covering for the head is recommended.
  - (1) The surgical head covering should be worn under the isolation gown or coverall to allow the power cord to be connected to the battery.
  - (2) This will add an extra step to doffing.
- ii) Don the MAXAIR hood according to the UIM.
- iii) Normally it is suggested to tuck in the hood. In this use this is not recommended.
- iv) Tie the neck closure tie securely following the User instructions.
  - (1) **TIING THE NECK CLOSURE IS MANDATORY.**
- v) Place a piece of duct tape over the center post at the top of the lens. It may extend over the filter as the front portion of the filter is not an intake area.
- vi) Tape shroud to coverall or gown to prevent "riding up" (suggested but not required).
- vii) To allow fully contained doffing use an isolation gown.
  - (1) Only tie the neck closure tie.
  - (2) Once fully donned (including gown) tape the lower front edge of the shroud to the gown.
  - (3) Tape the outer edge of the shoulders to the shoulders of the gown.
  - (4) Tape in at least one place between the shoulder and the front on each side.
  - (5) Lift the back of the shroud to expose the back closure of the gown.
  - (6) Tape across the closure 8-12 inches below the neck but above the bottom edge of the inner shroud.
  - (7) Open the neck closure and fold over at the tape.
  - (8) Put a piece of double sided tape on the inside layer of the gown.
    - (a) A piece of duct tape may be rolled to create a piece of double sided tape.
  - (9) Put a piece of double sided tape on the folded over outer layer of the gown.
  - (10) Cover neck closure and taped areas with the outer hood shroud.
  - (11) Press the outer shroud onto the double sided tapes.
  - (12) Tape the back of the shroud to the gown in at least 3 locations.

**c) Doffing - Note: If the above fully contained taping instructions have been performed, Ignore steps iv) through vi).**

- i) Rinse gloved hands in disinfectant solution and follow other CDC recommended glove protocols.
- ii) Untie the neck tie and cut off.
- iii) Grasp the back edge of the lens through the hood and unsnap the lens snap, repeat for other side.
- iv) Roll the shroud portion inside out, over the helmet.
- v) Pull the lens free of the center post.
- vi) Pull the hood back and off the helmet.
- vii) If the above fully contained taping instructions have been performed,
  - (1) Grasp the lower edge of the gown and roll it inside out. (like forming a cuff on a pair of pants)
  - (2) Continue pulling the "cuff" edge to roll the gown inside out and off the body and over the helmet.
  - (3) When the gown clears the shoulders, pull the arms out of the sleeves turning them inside out.
    - (a) **DO NOT REMOVE HANDS FROM THE SLEEVES.**
    - (b) The sleeve may be used as a pair of clean mittens to help finish doffing.
  - (4) Continue rolling the gown and hood off the helmet and move it forward and away from the body.
  - (5) Pull the lens free from the snaps.
  - (6) Remove hands from sleeves.
- viii) Remove the helmet.
- ix) Remove the head covering and remaining PPE per CDC guidelines.
- x) Spray de-con the entire helmet. (see below)

## 12. CAPR DLC Cuff System with 2365-02 DLC lens/cuff (01031291 & 01031316).

- a) Use with the 2070-03 Helmet (03531001), 2061-03 Filter Cover Cap (01031284) & 2164-10 HE Filter Cartridge (01031327).
- b) We understand this is being evaluated, however **WE DO NOT SUPPORT THIS, WE CAN NOT** consider conducting additional evaluations or fit testing which is required because of the change to the fit of the cuff.
- c) This may work best with only one of the sizes.
- d) There are significant doffing concerns with this.
- e) **EXERCISE EXTREME CAUTION.**
- f) Donning
  - i) Don a surgical hood or other head covering first.
    - (1) Use only a hood without front closures.
  - ii) Don the helmet and DLC cuff per the UIM.
  - iii) Tape the cuff to the hood.
    - (1) The cuff is designed to fit under the chin, but this may not be possible with a surgical or other hood.
    - (2) Use double sided tape to initially secure the cuff against the hood.
    - (3) Use duct tape to provide the appropriate seal.
  - iv) The use of the surgical hood over neck closure of the isolation gown or coverall requires the battery to be worn on the outside of the body coverings. This will cause de-con problems.
  - v) It may be possible to loop the power cord under the back of the surgical hood and into the neck of the coverall or isolation gown.
    - (1) If trying this, the hood and cord should be taped to the body covering where the cord runs under the hood.
- g) Doffing - should be done with the helmet running.
- h) This procedure requires more thorough evaluation.
  - i) Spray de-con the filter cover, hood and cuff.
  - ii) Alternative 1
    - (1) Roll the bottom of the surgical hood inside out over the helmet and DLC cuff.
    - (2) Apply tape to hold it in place
    - (3) Remove coverall or isolation gown
    - (4) Change gloves
    - (5) Unplug cord from battery
      - (a) The cord can be unplugged from the battery by grasping it through the gown or coverall which would allow the helmet and hood to be removed before doffing the body covering. This increases the chance forcing contaminants through the body covering by the force of the grasp.
    - (6) Remove surgical hood, helmet and DLC as a combined unit.
  - iii) Alternative 2
    - (1) Unsnap the DLC from the filter cover.
    - (2) Roll forward turning the cuff inside out.
  - iv) Alternative 3
    - (1) Remove the helmet allowing the cuff to tear.
    - (2) There is a concern about the elastic cuff snapping back when it tears which may allow the outside surfaces to contact the face.
  - v) Remove the coverall per CDC guidelines.
  - vi) Spray De-con the entire helmet. (see below)

**13. Helmet (& power cord) Cleaning-** if accidentally contaminated or if using 2061-03 Filter Cover (01031284) –This is not normally required if using the recommended hoods.

- a) Spray lightly with disinfectant solution (quaternary ammonia, hydrogen peroxide, bleach, etc.)
- b) All exterior surfaces should be wetted; avoid excessive amounts which can run into the electronics.
  - i) Hydrogen peroxide may be best because it will not have a noxious residual odor.
  - ii) Quaternary ammonia solution may also be low odor.
  - iii) Bleach will probably still be objectionable for a period after de-con.
  - iv) We are conducting odor evaluations.
- c) Wipe down and absorb disinfectant solution
- d) Allow to dry.

**14. Battery Cleaning**

- a) Wipe down thoroughly with disinfectant wipes.
- b) Do not spray down the batteries - the seam is not water tight.
  - i) If the batteries are taped around the seam, they may be sprayed while the cord is plugged in.

**15. Changing Filter Cartridge** – Loading from bacterial and viral particulates in a hospital, clean-air, environment is minimal and filters will typically last several months to more than a year from this type of loading. Filters are most often changed 1) immediately due to possible contamination by fluids and during de-gowning, and due to other soiling or damage (tearing, puncturing, etc.), and 2) every 6-12 months due to possible concerns regarding general exposure, storage, etc. Also note that if the Yellow Safety LED becomes lit due to system difficulty in maintaining adequate air flow, the filter must be immediately checked and replaced if its condition is questionable.

- a) Cloth gloves or heavy rubber gloves should be worn over impervious patient care rubber gloves when removing a contaminated filter cartridge.
  - i) The types of actions required may tear light weight gloves.
- b) Spray de-con the outer surfaces prior to beginning. (see above)
- c) Remove the Filter Cover Cap (01031284) per UIM (if being used).
  - i) Spray de-con inside and outside surface or completely immerse the Filter Cover Cap in disinfectant solution.
  - ii) Wipe or Drain dry.
- d) Spray de-con the filter cartridge and outer helmet surfaces
- e) Remove the filter cartridge per UIM and discard.
- f) Spray de-con the outer surfaces of the helmet
- g) Wipe dry
- h) Install new filter cartridge and replace Filter Cover Cap (if being used) per UIM